

AMENDMENTS TO THE CLAIMS

Listing of Claims:

1. (Currently amended) A method for generating or increasing the resistance to at least one pathogen in plants, comprising:

- a) reducing protein quantity, activity or function of an NADPH oxidase in a plant or a tissue, organ, part or cell thereof, and
- b) selecting plants in which, in contrast or in comparison with corresponding starting plants, the resistance to at least one pathogen exists or is increased,

wherein the reduction of the protein quantity, activity or function of the NADPH oxidase is ensured by an NADPH oxidase sense nucleic acid sequence, an NADPH oxidase antisense nucleic acid sequence, or a RNA interference (RNAi) approach using an NADPH oxidase nucleic acid sequence,

and wherein the NADPH oxidase comprises:

- a) the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22,
- b) a polypeptide sequence having at least 70% homology with the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22 and having the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22,
- c) a polypeptide sequence encoded by the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21,
- d) a polypeptide sequence encoded by a nucleic acid sequence having at least 70% homology with the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21 and having the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22, or
- e) a polypeptide sequence encoded by a nucleic acid sequence which hybridizes under standard conditions with the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21, a complementary thereof, or a part thereof, and having

the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22.

2. (Currently amended) The method according to claim 1, wherein the NADPH oxidase further comprises

a) ~~the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22, or~~

b) ~~a functional equivalent of the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22, wherein the functional equivalent comprises at least one sequence motif selected from the group consisting of:~~

- i) AL(K/R)GL(K/R) (SEQ ID NO: 25),
- ii) DK(N/D)XDG(R/K)(I/L/V)(T/N)E (SEQ ID NO: 26),
- iii) LSASAN (SEQ ID NO: 27),
- iv) IMEELDP (SEQ ID NO: 28),
- v) K(F/L)NMA(I/L)(I/V)LXPVCRN (SEQ ID NO: 29),
- vi) (E/Q)WHPFSIT (SEQ ID NO: 30),
- vii) S(A/S)PXDD(Q/Y)(L/I)S(I/V)H(V/I/L)R (SEQ ID NO: 31),
- viii) DGPYG(S/A)PAGDY (SEQ ID NO: 32),
- ix) L(I/V)GLGIGATP (SEQ ID NO: 33),
- x) FYWVTREQGSF (SEQ ID NO: 34), and
- xi) GVFYCG (SEQ ID NO: 35).

3. (Currently amended) The method according to claim 2 1, wherein the ~~functional equivalent has at least 50% identity with one of~~ NADPH oxidase comprises a polypeptide sequence having at least 90% homology with the polypeptide[[s]] as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22 and having the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22.

4. (Previously presented) The method according to claim 1, 2 or 3, wherein the reduction of the protein quantity, activity or function of an NADPH oxidase is ensured by applying a method selected from the group consisting of

- a) introducing a double-stranded NADPH oxidase RNA nucleic acid sequence or (an) expression cassette(s) ensuring its expression,
 - b) introducing an NADPH oxidase antisense nucleic acid sequence or an expression cassette ensuring its expression,
 - c) introducing an NADPH oxidase antisense nucleic acid sequence in combination with a ribozyme or an expression cassette ensuring its expression,
 - d) introducing NADPH oxidase sense nucleic acid sequences for inducing a cosuppression or an expression cassette ensuring their expression, and combinations thereof.
5. (Previously presented) The method according to claim 1, 2 or 3, comprising
- (i) stably transforming a plant cell with a recombinant expression cassette comprising, in functional linkage with a promoter which is active in plants, a nucleic acid sequence encoding
 - a) a double-stranded NADPH oxidase RNA ribonucleic acid sequence,
 - b) an NADPH oxidase antisense nucleic acid sequence,
 - c) an NADPH oxidase antisense nucleic acid sequence in combination with a ribozyme, or
 - d) an NADPH oxidase sense nucleic acid sequence for inducing a cosuppression,
 - (ii) regenerating a plant from the plant cell, and
 - (iii) expressing said nucleic acid sequence in such a quantity and for such a time as suffices for generating or increasing a pathogen resistance in said plant.
6. (Previously presented) The method according to claim 1, 2 or 3, wherein the pathogen is selected from the group consisting of bacteria, fungi, insects, viruses and nematodes.
7. (Previously presented) The method according to claim 1, 2 or 3, wherein the pathogen is selected from the group consisting of Plasmodiophoromycota, Oomycota, Ascomycota, Chytridiomycetes, Zygomycetes, Basidiomycota and Deuteromyceten.

8. (Previously presented) The method according to claim 1, 2 or 3, wherein the plant is selected from the group consisting of monocotyledonous and dicotyledonous plants.
9. (Previously presented) The method according to claim 1, 2 or 3, wherein the plant is selected from the group consisting of wheat, oats, millet, barley, rye, maize, rice, buckwheat, sorghum, triticale, spelt, linseed and sugar cane.
10. (Currently amended) A double-stranded RNA molecule for reducing the expression of an NADPH oxidase protein comprising

- a) a sense RNA strand comprising at least one ribonucleotide sequence which is essentially identical to at least part of the sense RNA transcript of a nucleic acid sequence encoding an NADPH oxidase, and
- b) an antisense RNA strand which is essentially complementary to the sense RNA strand of a),

wherein the NADPH oxidase comprises

- a) the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22,
- b) a polypeptide sequence having at least 70% homology with the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22 and having the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22,
- c) a polypeptide sequence encoded by the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21,
- d) a polypeptide sequence encoded by a nucleic acid sequence having at least 70% homology with the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21 and having the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22, or
- e) a polypeptide sequence encoded by a nucleic acid sequence which hybridizes under standard conditions with the nucleic acid sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21, a complementary thereof, or a part thereof, and having

the same essential characteristics as the polypeptide sequence as shown in SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20 or 22.

11. (Original) The double-stranded RNA molecule according to claim 10, wherein the two RNA strands of the double-stranded RNA are bonded covalently with one another.
12. (Previously presented) The double-stranded RNA molecule according to claim 10, wherein one of the two RNA strands is encoded by at least a part of a nucleic acid sequence encoding an NADPH oxidase, wherein the nucleic acid sequence comprises the sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21, or a functional equivalent thereof.
13. (Previously presented) A transgenic expression cassette comprising, in functional linkage with a promoter which is functional in plant organisms, a nucleic acid sequence encoding a double-stranded RNA molecule according to claim 10, 11 or 12.
14. (Previously presented) A transgenic expression cassette comprising at least a part of a nucleic acid sequence encoding an NADPH oxidase, wherein the nucleic acid sequence comprises the sequence as shown in SEQ ID NO: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 or 21, or a functional equivalent thereof, wherein said nucleic acid sequence is linked functionally in antisense orientation with a promoter which is functional in plant organisms.
15. (Previously presented) The transgenic expression cassette according to claim 13, wherein the promoter which is functional in plants is a pathogen-inducible promoter.
16. (Previously presented) A transgenic vector comprising an expression cassette according to claim 13.
17. (Previously presented) A transgenic organism comprising the double-stranded RNA molecule according to claim 10 or 11, an expression cassette comprising, in functional linkage with a promoter which is functional in plant organisms, a nucleic acid encoding said double-stranded RNA molecule or a vector comprising said expression cassette.
18. (Original) The transgenic organism according to claim 17, selected from the group consisting of bacteria, yeasts, animals and plants.
19. (Previously presented) The transgenic organism according to claim 17, selected from the group of the plants consisting of wheat, oats, millet, barley, rye, maize, rice, buckwheat, sorghum, triticale, spelt, linseed, sugar cane, oilseed rape, canola, cress, Arabidopsis, cabbages,

soybeans, alfalfa, pea, beans, peanut, potato, tobacco, tomato, egg plant, capsicum, sunflower, Tagetes, lettuce, Calendula, melon, pumpkin/squash and zucchini.

20. (Previously presented) A tissue, organ, part, cell, cell culture or propagation material derived from the transgenic organism according to claim 19.

21. (Previously presented) The method according to claim 4, comprising

(i) stably transforming a plant cell with a recombinant expression cassette comprising, in functional linkage with a promoter which is active in plants, a nucleic acid sequence encoding

- a) a double-stranded NADPH oxidase RNA ribonucleic acid sequence,
- b) an NADPH oxidase antisense nucleic acid sequence,
- c) an NADPH oxidase antisense nucleic acid sequence in combination with a ribozyme, or
- d) an NADPH oxidase sense nucleic acid sequence for inducing a cosuppression,

(ii) regenerating a plant from the plant cell, and

(iii) expressing said nucleic acid sequence in such a quantity and for such a time as suffices for generating or increasing a pathogen resistance in said plant.

22. (Previously presented) The transgenic expression cassette according to claim 14, wherein the promoter which is functional in plants is a pathogen-inducible promoter.

23. (Previously presented) A transgenic vector comprising an expression cassette according to claim 14.